

Biogeosciences Discuss., referee comment RC1
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Comment on bg-2021-333

Anonymous Referee #1

Referee comment on "How much do bacterial growth properties and biodegradable dissolved organic matter control water quality at low flow?" by Masihullah Hasanyar et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2021-333-RC1>, 2022

The manuscript provides the sensitivity analysis for a water quality submodel that is amended by introducing constant repartitioning ratios for dissolved organic matter fractions. A synthetic dataset is used in simulations. The work is technically correct. However, the realism of the results and recommendations is questionable since general substantial factors are ignored. The following processes and factors may make their results not necessarily applicable in some situations. Specific reasons for that are as follows.

- It is not clear whether the sensitivity results will hold if there will be source-sink terms for organic matter.
- No attention is paid to the radiation effects of the bacteria population that is most pronounced at low flows
- The role of the hyporheic exchange in bacteria population dynamics at low flows is ignored and can be substantial
- The introduction of constant parameters to simulate the repartitioning is a gross simplification. Monitoring data show that the ratios vary.

These and similar limitations of the work should be acknowledged, evaluated, and discussed before the work can be considered for publication.